

# 带锁髓内钉治疗下肢骨折的并发症及防治

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**摘要** 目的:探讨带锁髓内钉治疗下肢长管状骨骨折的并发症原因,提出防治措施。方法:回顾性分析 1998 年 3 月 - 2004 年 5 月用带锁髓内钉治疗的下肢长管状骨骨折 101 例,发生并发症共 19 例。锁钉放置失败 3 例,正确连接或更新瞄准器;术中新骨折 2 例,更换或辅以其他内固定;感染 2 例,足量应用敏感抗生素,创口引流,冲洗;延迟愈合 2 例,变静力为动力固定;骨不连 1 例,行拔钉、扩髓、换钉、植骨;再骨折 4 例,二次手术或制动;锁钉断裂、退出 4 例,未处置;肢体短缩 1 例,未处置。结果:锁钉放置失败、术中新骨折、延迟愈合、骨不连、术后再骨折、感染,共 14 例,均骨愈合。锁钉的断裂、退出 4 例,未影响骨愈合。肢体短缩 1 例,未影响骨愈合及正常生活。结论:运用带锁髓内钉治疗下肢长管状骨骨折严格掌握适应证及遵循静力和动力固定原则、彻底清创,是减少并发症的有效措施。

**关键词** 骨折; 下肢; 骨折固定术,髓内; 手术后并发症

**Causes of complications and prevention in the treatment of lower extremity fractures with intramedullary interlocking nails** LIU Jian-bin, HAO Da-cheng, CHEN Long-li. Department of Orthopaedics, Daqing People's Hospital, Daqing 163316, Heilongjiang, China

**Abstract Objective:** To study causes of the complications in the treatment of tubular bone fractures of lower extremities with intramedullary interlocking nails, and to explore its prevention and cure methods. **Methods:** Form March 1998 to May 2004, 101 patients with tubular bone fractures of lower extremities were treated with intramedullary interlocking nails. Among the patients 19 patients had complications, 3 patients who were failure in putting interlocking nails were treated with changing new aimer and handle carefully, 2 patients who were new fractures during the operation were treated with changing or adding other internal fixation, two patients with infections were treated with sensitive antibiotic associated with draining and washing wound, two cases of delayed union were treated with converting the fixation from static to dynamic, 1 patient with non-union was treated with removing locking nails, enlarging intramedullary tunnels, exchanging nails and bone grafting, 4 cases of re-fracture were treated with second operation and immobilization, 4 cases of interlocking nails broken or exiting were not treated with any disposal because of its no effect on bone healing, and 1 patient with limb shortening was also treated with no any disposal. **Results:** In the 14 patients with such complications as failure place of interlocking nails, new fractures during the operation, delayed union, non-union, postoperative re-fractures and re-infections, the fractures were finally healed. Interlocking nails were broken and existed in 4 patients. No effect on bone healing was achieved in 4 patients whose interlocking nails were broken or exited. One patient with limb shortening can live with normal life and have bone healing. **Conclusion:** Controlling operative indication strictly and mastering principle of static and dynamic fixation, as well as completely debridement are effective measure to decrease complications in the treatment of extremity fractures with intramedullary interlocking nails.

**Key words** Fractures; Lower extremity; Fracture fixation, intramedullary; Postoperative complications

自 1998 年 3 月 - 2004 年 5 月采用带锁髓内钉治疗下肢长管状骨骨折 101 例,发生并发症 19 例,对治疗中的并发症,分析其原因,提出防治措施。

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## 1 临床资料

本组股骨干骨折 56 例(闭合性骨折 50 例,开放性 6 例);胫骨干骨折 45 例(闭合性骨折 38 例,开放性 7 例)。术中并发症:锁钉放置失败 3 例,股骨干、股骨颈新骨折各 1 例。术后并发症:感染 2 例,延迟

愈合 2 例,骨不连 1 例,再骨折 4 例(髓内钉断裂 2 例,钉尾部再骨折 1 例,股骨头切割 1 例),锁钉断裂、退出 4 例,肢体短缩 1 例。101 例共发生并发症 19 例,占 18.81%。本组未发生文献报道的脂肪栓塞、神经损伤、血管损伤等并发症。

## 2 治疗方法

本组 88 例闭合骨折在伤后 7 d 内、13 例开放骨折在伤后 6~8 h 内经 C 形臂 X 线机透视下行静力性内固定。并发症中:锁钉放置失败 3 例,正确连接或更新瞄准器;股骨干新骨折 1 例改为细髓内钉固定,股骨颈新骨折 1 例辅以空心钉固定;感染 2 例,足量应用敏感抗生素,创口引流、冲洗;延迟愈合 2 例,变静力为动力性固定;骨不连 1 例,行拔钉、扩髓、换钉、植骨;髓内钉断裂 2 例更换为粗梅花针或带锁髓内钉、植骨;钉尾部再骨折 1 例,带锁髓内钉重新固定;股骨头切割 1 例,卧床 2 个月;锁钉断裂、退出 4 例,未特殊处置;肢体短缩 1.5 cm 1 例,未处置。

## 3 结果

19 例并发症治疗后经至少 1 年以上随访,14 例骨愈合。4 例锁钉断裂、退出,未影响骨愈合。1 例肢体短缩,未影响骨愈合及正常生活。

## 4 讨论

**4.1 术中的并发症** 锁钉放置失败。原因:髓内钉打入使钉体变形,定位杆未在骨中央;瞄准器连接错误或老化等。预防:使用扩髓钉应全程扩髓,正确放置定位杆;正确连接或及时更新老化瞄准器;透视定位。术中新骨折。原因:扩髓不充分、或超过骨皮质的 1/2;骨折对位不良暴力打入髓内钉;骨折术前未发现(尤其股骨颈);进钉点偏内、开口过小,髓内钉打入致股骨颈骨折等。预防:术前据 X 线片对骨折及髓腔充分估计;扩髓充分但不过度;忌暴力打入髓内钉;确定进钉点并注意开口大小。

**4.2 术后的并发症** 感染。股骨骨折术后感染率为 1.1%<sup>[1]</sup>,胫骨达 7.6%<sup>[2]</sup>,都发生在开放性骨折。与其他内固定术相比较,髓内钉术后感染发生率较低<sup>[3]</sup>。原因:全身情况差;伤后至治疗时间长;开放骨折清创不彻底,术中扩髓;手术、切口暴露时间长;骨膜剥离广泛;术后未合理应用抗生素等。预防:术前调整患者全身状态;开放性骨折彻底清创并闭合性穿钉、行不扩髓钉固定为宜<sup>[4]</sup>;缩短手术、切口暴露时间;减少骨膜剥离;术后合理应用抗生素,

使感染局限至最小范围。治疗:暂不取出髓内钉,给予足量敏感抗生素,创口引流、冲洗等;感染严重须拔除髓内钉。骨延迟愈合、骨不连。原因:过度扩髓或广泛剥离骨膜;骨折断端分离、存在骨缺损或钉太短不足以抵消骨折端应力;术后感染;过早过度负重;外力致髓内钉变形;未及时变静力为动力固定等。预防:减少血运破坏、尽量闭合穿钉;选钉适宜、内固定确切、骨缺损时应植骨;预防、控制感染;严格注意负重、避免外力;静力变动力宜在术后 10~12 周进行。治疗:改静力为动力固定<sup>[5]</sup>;拔钉、扩髓、换钉、植骨<sup>[6]</sup>等。断钉。原因:髓内钉过短、过细;血运破坏严重;骨折不稳定,存在剪切应力;锁钉置入困难,反复钻孔致骨孔过大;钉帽与骨质间嵌入软组织,长期牵拉;过早过度负重。预防:选择适合髓内钉;术中减少血运破坏;骨缺损时应植骨;置入锁钉避免反复钻孔、嵌入软组织;不稳定性、二次手术的骨折应待骨痂形成后逐渐负重。再骨折。钉尾部再骨折原因:髓内钉过短、钉尾部应力集中;锁钉置入时反复钻孔;过早过度负重。预防:选择适当长度髓内钉;置入锁钉避免反复钻孔;严格注意负重。股骨头切割原因:髓内钉进钉点欠佳;髓内钉过长、近端锁钉固定于股骨颈;过早过度负重。预防:选择适当长度髓内钉;正确选择进钉点位置,可逆向确定;严格注意负重。治疗:再次手术固定。肢体不等长、旋转。原因:牵引不当;术中未注意骨性标识;粉碎性骨折缺乏支撑点;过早改静力为动力固定。预防:牵引需防不够、过牵及旋转;术中注意骨性标识的对合;骨缺损时植骨;不稳定骨折静力改动力固定应待骨痂形成后。

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